

Application No. 09/841,282
Amendment dated May 27, 2005
Reply to Final Office Action dated February 28, 2005

Docket No. 12-4709

Amendments to the Claims:

Claims 1, 2, 4, 6, 7, 10, 11 and 36-41 are pending in this application. Claims 1 and 36 are independent.

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1 (CURRENTLY AMENDED): An optical modulation element capable of forming a reflective diffraction grating in which heights of a plurality of elements each having a reflecting surface periodically change,

wherein the reflecting surface of at least one of the plurality of elements is supported ~~in a length direction~~ by a piezoelectric element when driven in a direction of height by the piezoelectric element,

wherein the plurality of elements are respectively provided with the piezoelectric element where the polarities of electric fields of which are alternately different from each other, and

wherein a deformation amount of a projecting or recessed shape of each element is changed by adjusting a voltage to be impressed to the piezoelectric element, thereby controlling an intensity of ~~reflected light~~ reflected and diffracted by said reflective diffraction grating.

2 (ORIGINAL): An element according to claim 1, wherein the plurality of elements each having the reflecting surface are two-dimensionally arrayed by juxtaposing long sides.

3 (CANCELLED):

Application No. 09/841,282
Amendment dated May 27, 2005
Reply to Final Office Action dated February 28, 2005

Docket No. 1:02-4709

4 (PREVIOUSLY PRESENTED): An element according to claim 1, wherein a rear surface side of an effective reflecting portion of each of the elements is fixed to the piezoelectric element.

5 (CANCELLED):

6 (ORIGINAL): An element according to claim 1, wherein when the reflecting surfaces of the plurality of elements are substantially flush with each other, said reflecting surfaces act as a flat mirror as a whole.

7 (ORIGINAL): An element according to claim 1, wherein each of the elements is a strip-shaped element having a width of about 5 μm .

8-9 (CANCELLED):

10 (PREVIOUSLY PRESENTED): A projection apparatus including an optical modulation element for modulating incident light in accordance with a video signal, wherein the optical modulation element is formed from said optical modulation element of claim 1.

11 (PREVIOUSLY PRESENTED): An element according to claim 1, wherein pixels each formed from the plurality of elements are arranged in a two-dimensional array.

12-35 (CANCELLED):

36 (CURRENTLY AMENDED): An optical modulation element, comprising:
a plurality of reflecting surfaces; and
~~means for controlling positions of the reflecting surfaces~~ a plurality of piezoelectric elements configured to control the height of corresponding reflecting surfaces

Application No. 09/841,282
Amendment dated May 27, 2005
Reply to Final Office Action dated February 28, 2005

Docket No. 12-4709

that the reflecting surfaces form a reflective diffraction grating which generates diffraction light on the basis of incident light,

~~wherein said plurality of reflecting surfaces are capable of forming a reflective diffraction grating which generates diffraction light on the basis of incident light by control of the positions of said plurality of reflecting surfaces by means of said means for controlling the intensity of light reflected and diffracted by said reflective diffraction grating is adjusted by adjusting a voltage to be impressed to the piezoelectric element.~~

37-38 (CANCELLED):

39 (PREVIOUSLY PRESENTED): A projection apparatus comprising:

an optical modulation element according to claim 36; and

a projection optical system for projecting light from said optical modulation element.

40 (PREVIOUSLY PRESENTED): The projection apparatus according to claim 39, further comprising a stopper for shielding light reflected without being diffracted in said optical modulation element.

41 (PREVIOUSLY PRESENTED): The projection apparatus according to claim 39, further comprising a stopper for shielding light reflected without being diffracted, wherein light diffracted in the optical modulation element is not applied to said stopper, but projected to a predetermined surface by said projection optical system.

42 (NEW): An element according to claim 36, wherein said plurality of reflecting surfaces are

Application No. 09/841,282

Docket No. 1212-4709

Amendment dated May 27, 2005

Reply to Final Office Action dated February 28, 2005

capable of acting as a flat mirror under the control of said piezoelectric element.

43 (NEW): An element according to claim 1, wherein said plurality of reflecting surfaces are capable of acting as a flat mirror under the control of said piezoelectric element.